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Combat Crew

strategic air command

FEBRUARY 1987
★★★★

THE POSITIVE APPROACH!

Recently, Brigadier General Rogers became SAC's Deputy Chief of Staff for Strategic Planning and Analysis. Combat Crew wishes the best for General Rogers in his new assignment. —Ed.

As I conclude my seventh month as your Inspector General, I want to share my thoughts and observations with you. Traveling as the IG you see the scope of SAC's mission and a great variety of challenges the units face. First of all, and most important, the people of SAC are truly impressive! The professionalism, spirit, creativity and ability of our people stand out as the most outstanding observation. In the next few paragraphs, I will briefly comment on the positive approach in the inspection process, future inspections and your safety success.

Our goal has been to perform the inspection function with a strong positive approach. A recent step by SAC to fulfill this goal involves conducting notice inspections. Advanced notification of IG visits has reduced unit turbulence and provides a better inspection environment for the unit. The result is better preparation and more efficient management of unit resources.

In addition to the positive approach, I consider it absolutely essential that we recognize excellence when it is observed. In fact, over 95 percent of all IG ratings have been satisfactory, excellent or outstanding. We have enhanced the Superior Performer Program to identify those individuals who best exemplify the SAC standards of excellence, based on tough criteria. These individuals are recognized both at the outbrief and listed in the report.

New CINCSAC "Outstanding Rating" certificates are awarded for all outstanding ratings earned during an ORI/UEI/NSI. These certificates provide an extra recognition for outstanding units; i.e., squadrons, divisions, branches, etc. Additionally, "Good Ideas" for projects, policies, innovations and practices that enhance working conditions, morale and safety are specifically highlighted in the inspection report and executive summary — simply "Good Ideas" that make sense and offer a better way. In the past six months we have recognized over 600 "Good Ideas" that provide a menu of what has worked well for other units to consider. Also, to round out our recognition of people, organizations and facilities, we award CINCSAC "Standards of Excellence" certificates for those facilities that truly set the standard in SAC. These are some of the ways we seek out excellence and recognize it in a lasting manner.

In addition, as our inspectors review and discuss programs with unit members, they offer the benefit of their experience and observations at other units. We see SAC's finest people and organizations at work and we want to be ambassadors and help transfer excellence to other units.

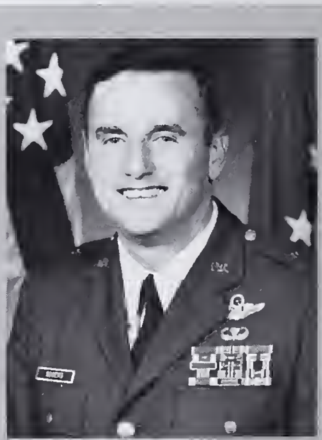
In order to help you better prepare for future inspections, here's a roadmap of key trends for the future. You should expect and prepare for more joint inspections — the wave of the future. For example, in December 1986, the 2 BMW at Barksdale did well in participating with SAC, MAC, AFLC, Army and AFRES inspectors. The benefits of joint inspections are clear: total integration of war plans, realistic evaluations and fewer inspections at host bases. More than half of our inspections in the future will be joint (multi-unit/multi-MAJCOM), including SAC gained units of the Air National Guard and Air Force Reserve. These will be more challenging, and they offer us a superb learning experience and the best evaluation of our readiness.

SAC is in a dynamic transition and strategic conventional warfighting is being greatly enhanced. The inspection process will mature with these conventional developments. Presently we are conducting "No Fault" Conventional ORIs (CORIs) as we await HQ USAF approval of SAC criteria. In the future, you can expect CORIs to include generation, employment, live drops, mobility, chemical warfare procedures, integrated combat turns, Forward Operating Locations (FOL) reception planning, strategic mission support and Leading Shield briefings and preparations.

Some areas that General Chain has asked the IG to specifically look at include **Airmanship:** enhancing the quality of airmanship that will allow us to operate our aircraft any time, anywhere, under any conditions; **Missileer Vigilance:** enhancing our capability to promptly employ our weapons on target if the need should arise; **Predeployment Training:** expanding the preparation our crews receive for the demanding operating conditions at overseas locations; **Standards of Excellence:** focusing on facilities, aircraft and vehicles, as well as how we will do our jobs. SAC's goal is professional facilities for professional performers at home, at work and at play. These areas all relate to magnifying the pride, esprit and confidence our crew members have in doing their jobs, in addition to building on the tangible and intangible aspects of being a SAC professional crew member.

Another major responsibility we all share is safety. 1986 was a banner year for SAC safety — congratulations to all of you! You have saved lives and dollars through your safety excellence. Zero bomber Class A mishaps were recorded while matching our historically best year of one Class A mishap and establishing a flying safety rate of less than 1.0 for the fifth consecutive year. Additionally we experienced only one operational Class A and one Class B missile mishap. You also set a new command record for the fewest ground fatalities in one year — a 43% reduction from 1985. Safety is a fragile business and as we move into 1987 we must continue to increase safety awareness. Make safety a "state of mind," review lessons learned from past mishaps and emphasize everyone's responsibility in safety, both on and off base.

In summary, the IG process is a vital element of SAC readiness, as we provide the opportunity for units to truly show what they can do in addition to sharing their "Good Ideas". SAC's readiness today is the highest it's been in the command's history. Our people are better educated, trained and capable. Our weapons systems are at their highest state of readiness as evidenced by missile and aircraft alert rates, mission capable rates, and consistently tight bomb scores. SAC has an impressive capability which is a direct reflection of your talent, ability and energy — that of its **WARRIORS!★**



Brig Gen Alan V. Rogers

Combat Crew

Magazine of the Strategic Air Command — 37th Year of Publication

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On Our Cover

This RC-135 is enjoying smooth sailing. If the weather turned nasty, however, would the crew really be ready for the final phase of the landing? Turn to page 4 for an incisive look at this phase of flight. (Cover photo by Maj William H. Stranberg, HQ ESC/INKC, formerly of the 38 SRS.)

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COMBAT CREW is an internal publication of the Strategic Air Command with the primary purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitious. Written permission must be obtained from Headquarters, Strategic Air Command before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF, Distribution FX, controlled by IGFE, SAC units submit distribution requests through local PDO. Reader to copy ratio one per combat crew; 10:1 for other SAC personnel. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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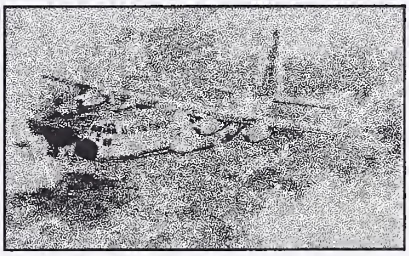

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After Touchdown

Rethinking the Final Phase of the Landing

Lt Col Michael J. Cook
384 AREFS, McConnell AFB

After 13 hours of flight and a 16 hour crew duty day, the RC-135 crew was only 30 minutes from their overseas destination. Planning an enroute descent to an ILS, the crew had completed the Descent Checklist. Approximately one hour earlier, they had received via AFSATCOM, recovery weather which was forecast to be 1500 feet overcast, visibility 7000 meters with light snow, temperature 30 degrees F, pressure altitude of +200 feet and winds 010 at 10 knots. There was no indication of other than a dry runway. In fact, at the time of the AFSATCOM message, the actual weather at the recovery base was 3500 feet overcast, visibility 3000 meters with light snow, temperature 33 degrees F, pressure altitude of +200 feet and winds calm. The crew computed and posted the landing data using forecast weather and a landing gross weight of 195 thousand pounds. The experienced aircraft commander "worst cased" the landing by using an RCR of 09. The landing data reflected a 50 flap final approach speed of 153 KIAS, threshold speed of 149 KIAS, and a landing roll of 7800 feet using an 80 percent delayed braking factor with an RCR of 09. The crew felt comfortable with the ground roll on the 9300 feet runway (10,300 with stressed overrun included). It was the copilot's turn to fly the descent, approach, and landing. Having been crewed together for over a year, the aircraft commander felt the weather was well within the capability of the copilot.

A normal enroute descent was accomplished with no additional update of landing weather. When approximately 17 miles from the field, the crew was switched from ATC to Approach Control for vectors to an ILS final. On initial contact with RAPCON, the crew received a weather update that showed current weather to be 600 feet overcast, visibility 2000 meters in light snow and fog, winds calm. While the pilots were obtaining the weather update from RAPCON, the navigators monitored and copied on tower frequency that the runway now had an RCR of 11 and relayed this new information to the pilots. Somewhat confused over the disparity between the tower and RAPCON on RCR, the crew finally verified that the runway condition was loose snow and ice on the runway, RCR 11, overrun RCR of 09. Verification of the true runway condition occurred somewhere between 15 miles and glide slope intercept. The crew noted the runway condition and reviewed their computed landing data including landing ground roll. As they had planned on an RCR of 09, the crew felt comfortable with the landing as actual conditions were better than their "worst case" data. True, the ceiling and visibility had been reduced, yet conditions remained within the copilot's capability.

The aircraft approached a three-mile final, tower cleared them to land with winds reflecting a three-knot tailwind component. The pilot emphasized to the copilot to be on speed and glide path across the threshold to preclude landing long. At this point in the flight, there was no real concern about a safe land-

ing but a little added caution was expressed. The crew confidently approached touchdown.

The copilot made a normal landing, touching down somewhere between 1500 and 2000 feet down the runway. After reaching the three-point attitude, the pilot raised the speed brakes and almost simultaneously checked the brakes at approximately 130 KIAS. The brakes checked good and the pilot commenced normal braking. During the first half of rollout, both pilots sensed normal braking effectiveness and deceleration. At the 4000 feet remaining marker, the copilot called out the airspeed as 100 KIAS. The pilot stated that he could not imagine at this point of not being able to safely stop the aircraft in the remaining runway. However, in the next few seconds between the 4000 feet and 3000 feet remaining, the pilot and copilot sensed the aircraft was not decelerating as they felt it should. At this point, the pilot applied maximum braking with max pedal deflection. Now approaching the stressed overrun with the airspeed fluctuating between 40 and 50 KIAS, the pilot determined that the aircraft could not be stopped within the confines of the runway. At this point, he made a conscious decision to steer the aircraft off the runway to avoid the approach lights and ILS building. The left main landing gear and nose gear departed paved surface and the aircraft came to a halt 200 feet from the end of the stressed overrun. Engines were shut down and the 30 crew members evacuated the aircraft without incident. The aircraft itself sustained no damage other than a mandated changeout of those tires that had left the hard surface.

An indepth review of this incident from takeoff to touchdown revealed a chain of separate events which when linked together led to the aircraft coming to rest off the runway with the gear in the mud and snow. Perhaps if just one event in this chain had not occurred, this incident would not have happened.

What led to this incident? But even more importantly, what can be done now to prevent any future occurrence — perhaps one with more disastrous results?

There were several contributing factors to this incident:

a. Although light snow had been falling most of the day, snow did not start accumulating until approximately two hours prior to the incident.

b. Base Operations had but one dispatcher on duty during this time frame.

c. Although queried by several on-base agencies on the status of the runway, the Base Ops dispatcher did not perform an RCR check until approximately 30 minutes prior to the RC-135's landing time.

d. The crew never updated the deteriorating weather for their landing time frame.

e. As a result, updated information on the RCR was finally passed to the aircraft at the 17 mile point on final approach. Here the aircraft was approximately 6 minutes from touchdown.

f. Approximately one to two inches of wet snow had accumulated on the runway.

g. Snow removal personnel did not have time to clear the runway prior to the aircraft landing.

The remainder of this article will deal only with what crew members can do to prevent any future landing incidents. Most −135 pilots rarely land at gross weights in excess of 185 thousand pounds, yet, you may just learn something from this incident.

Let us begin with the landing data computations. The applicable −135 Dash 1, Section II, directs that desired landing data including the landing data card should be completed prior to descent. We are all familiar with the landing data card, it is self-explanatory. Or is it? What is STOPPING DISTANCE? The Performance Appendix of the applicable Dash I does not define STOPPING DISTANCE. However, the Example Problem 1 leads us through a computation of landing data including a corrected landing ground roll and posts this as STOPPING DISTANCE on the example Landing Data Card. Does the landing ground roll with all applicable corrections give you the "warm fuzzies" for safely stopping the aircraft after landing?

In the incident just discussed, landing ground roll was computed to be 7800 feet using a Delayed Braking Factor of 80 percent and an RCR of 09. If we post this as STOPPING DISTANCE and compare it to the runway available — 9300 feet at the incident base, the crew had a 1500 feet margin. Is this correct? What about Flare Distance? The computed Flare Distance is 1900 feet thus yielding a Total Landing Distance of 9700 feet. With everything done correctly, landing data indicates that the aircraft should have stopped about 500 feet into the overrun. However, the actual reported RCR was 11 which is better than a 09. Should we still have the "warm fuzzies" about safely stopping the aircraft within the confines of the runway? The incident crew stated they had a good feeling about the landing as they had made many landings on wet runways including almost three weeks of operations out of this base.

If you now have the "warm fuzzies" about your ability to stop the aircraft, please permit me to pose another question or two. You are in the same situation as the RC-135 crew. You have just touched down 1900 feet down a 15,000 foot runway, the aircraft is in a three-point attitude, and you have just raised the speed brakes to 60 degrees. Can you describe the braking procedures/techniques required to achieve the computed landing ground roll of 7800 feet? In other words, tell us how you can bring the aircraft to a complete stop in 7800 feet.

This same question was posed to over 60 instructor pilots, pilots and copilots from various models of the −135 (EC/RC/KC). Over 75 percent of those pilots surveyed did not realize that full wheel brake application is required to achieve charted landing ground roll. Most of the crew members surveyed thought the braking required was something between normal brake application and heavier than normal braking. A CAUTION in the Performance Appendix of the Dash 1 states that any variation in touchdown point and/or prescribed braking technique can increase total landing distance as much as 2500 feet. In our incident, this would yield a total stopping distance of 12,200 feet — over 2000 feet beyond the overrun.

Recall again when that the crew computed landing based on a "worst case" assumption, they allowed for a "wet" runway (a frequent occurrence at this overseas base). This was the pilots' usual method of computing landing ground roll. The −135 Dash 1 states that decelerometer readings on a wet runway are invalid, therefore we are directed to use an RCR of 09 for landing computations when the runway is reported "wet." However, doesn't your own experience on "wet" runways (either porous friction or grooved with no standing water or other surface coverings) seem to indicate a braking action significantly better than an RCR of 09? Furthermore, base operations personnel qualified to conduct RCR readings indicate that the decelerometer readings for a "wet" runway will yield a braking effectiveness equivalent to an RCR of between 15 and 20. Could not the wording in the −135 Dash 1 as well as experience in landing on "wet" runways lull us into a sense of false security? In any event, the 7800 foot landing ground roll did not seem out of the ordinary nor critical to this experienced RC-135 crew. Even the tower call at 17 mile final giving an RCR of 11 triggered no crew response other than they were "OK" to land in the runway available. This crew had landed many times on "wet" runways and had never experienced any problems stopping the aircraft or at least slowing to a safe taxi speed to exit the runway. Now based upon your experience, how would you have approached this landing? Could you have had similar misconceptions with the same result as the incident crew?

Cont'd on Page 26 . . .

Circling Approaches

Maj George Jeffcoat
CFIC, Castle AFB

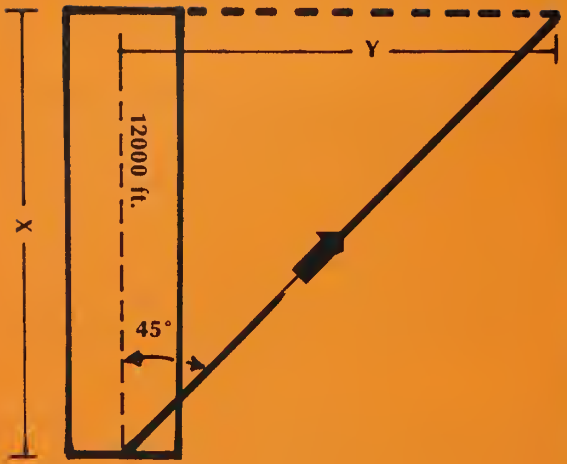
After a year of back-to-back alert tours, you and your crew are about to land at Paradise Island somewhere in the Pacific for 30 days of strenuous TDY duty. The latest weather observation received is 600 overcast with two miles visibility in light rain. "No sweat" you think to yourself as you settle back and begin to plan your first night's activities. About this time approach control transmits your clearance as follows: "Rudy 22 is cleared for the TACAN runway 36 to circle east for a left base to land on runway 18." Now what do you do? You cannot remember the last time you flew a circling approach and have never discussed circling procedures and techniques with your crew.

Due to our expanding tanker task force commitments, we are seeing our aircrews faced with similar scenarios on an ever increasing basis. This, combined with an overall lower experience level and reduced flying hours, add up to a mishap or incident looking for a place to happen. The best prevention is to prepare yourself for these surprises by discussing specific crew procedures and then testing them during routine training missions when weather conditions are optimum. If you can work the bugs out under these conditions, then when faced with a scenario similar to the one we have presented, the circling maneuver can be completed with ease. The purpose of this article is to review some of the considerations and techniques used to fly a successful circling approach and provide a foundation for you to establish workable crew procedures.

The first thing to keep in mind is that a circling approach is a visual maneuver, but not a VFR traffic pattern. You must keep the runway environment (airport environment for CONUS) in sight throughout the entire maneuver. This requires meeting both ceiling and visibility minimum criteria.

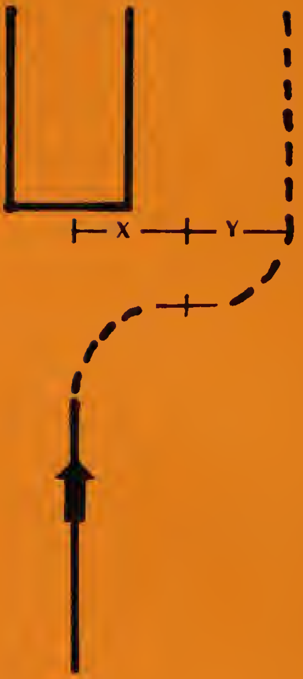
The second, and probably most important consideration is how to obtain the correct offset on downwind. There are several important factors to keep in mind when deriving the offset. One, you must offset far enough to permit turning to final using 30° of bank without overshooting the runway. The common tendency here is to maneuver too close to the runway because your perspective is different at the lower altitudes normally flown during circling approaches. To help overcome this tendency AFB 51-37 recommends flying the maneuver at normal VFR traffic pattern altitude, weather permitting. However, it is also recommended that practice approaches be flown simulating worse case conditions, i.e., fly at the published

FIGURE 1



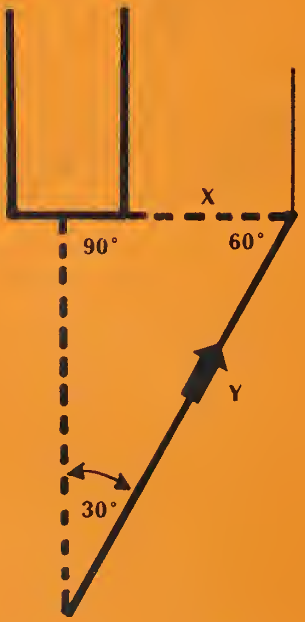
X = Y = 12000 ft.

FIGURE 2



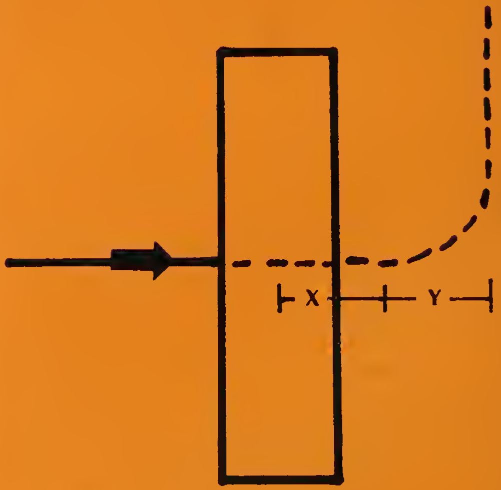
X = Y = Turn Radius

FIGURE 3



If Y = 2X and X = 2 Turn Radii,
Then Y = 4 Turn Radii

FIGURE 4



X = 10% TAS = Y = Turn Radius

circling MDA. Two, you must remain within the obstruction clearance area designated for the aircraft's category. Three, you must remain within the established visibility minima for the approach. This is important because the runway environment must remain in sight at all times and the required visibility is often less than the obstruction clearance area. For example, a category E aircraft has an obstruction clearance radius of 4.5 nm, but the approach may only require two miles visibility. If you fly close to the obstruction clearance boundary you could theoretically lose sight of the runway environment because of the lower visibility criteria. With these factors in mind let's review several techniques that can be used to obtain a useable offset while circling to the opposite runway.

First is the 45° technique **(figure 1).** Using this technique you fly to the approach end of the runway and then, using 30° of bank, turn 45° off runway heading. Maintain this heading until abeam the departure end at which time a 30° bank turn is made to parallel runway heading. This will result in a downwind offset equal to the length of the runway. For most SAC standard 12,000 feet runways this will result in an offset of 2 nm. This technique is good in that it provides a known offset. However, there are some drawbacks to this technique. Keeping the runway environment in sight during the latter portion of the 45° offset may be difficult. It does not take the aircraft's actual turning performance into account and it places category D aircraft very close to their 2.3 nm obstruction clearance radius.

Another technique is to use two back-to-back 90° turns using 30° of bank in each **(figure 2).** This technique gives you the required offset based on actual aircraft performance, however, it may be extremely difficult to keep the runway environment in sight during and after the first 90° turn.

The last technique for circling to the opposite runway is the 30° technique **(figure 3).** Using this technique, first align the aircraft with the runway. Begin maneuvering 1-2 nm from the end of the runway to facilitate keeping the runway environment in sight. The maneuvering consists of turning 30° off runway heading using 30° of bank. Once established on this heading fly for a time equal to 4 times 10% of your TAS after which use 30° of bank to turn to a parallel heading for downwind. For simplicity IAS can be used for this computation since TAS is approximately equal to IAS at the altitudes associated with circling approaches. The basic procedure is very simple. Flying the 30° offset heading for a time equal to 4 times 10% TAS will offset you exactly one turn diameter from the runway based on actual aircraft performance. This procedure looks good on paper and works well inflight, however, it requires attention to detail and good crew coordination.

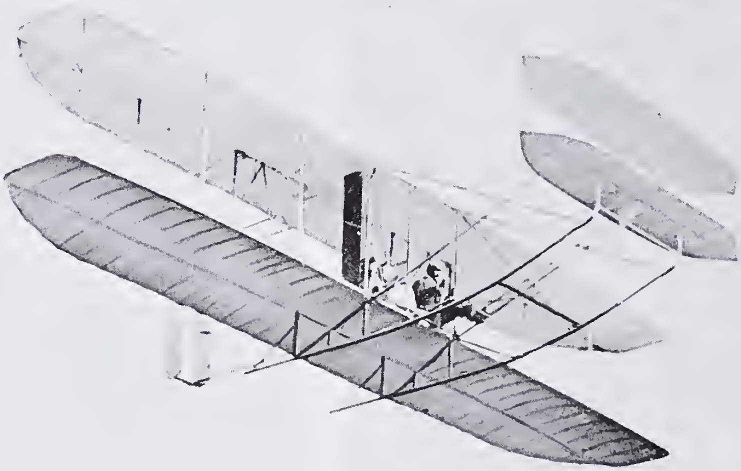
What about the approach that brings you in perpendicular to the landing runway **(figure 4)?** Here you can use the 10% of TAS technique. Once you cross the runway, maintain heading for a time in seconds equal to 10% TAS. This gives you one turn radius offset. At the end of this time use 30° of bank to turn to a parallel downwind heading which provides the second turn radius for a total offset of one turn diameter.

Regardless of which technique used to get to downwind you must now determine when to turn final. The techniques used for normal VFR traffic patterns will not work during circling approaches due to the obstruction clearance area and visibility restrictions. Plan this turn to give enough time and distance on final for a normal transition to landing. One technique is to turn when 1 nm past the end of the runway which will place your wings level on final approximately 1 nm from touchdown under no-wind conditions. This distance can be approximated by timing for 15-20 seconds after passing the end of the runway on downwind. The actual time will vary according to aircraft speed and winds. Remember, maintain 30° of bank throughout the final run. Failure to do so could result in an overshooting final approach if the downwind offset was correct.

The final consideration is when to descend below the published circling MDA. AFM 51-37 states not to descend until in a position to execute a normal landing. One technique is to plan to roll out 300 feet AGL 1 nm on final which places you on a 3° glide path. This 3° descent can be initiated when approximately half way around the final turn. This is based on an average circling MDA of 550 feet AGL with a 1½-1¾ nm offset on downwind. This provides slightly under 1 nm to lose 250 feet which approximates a 3° glide path.

This brief review should provide a starting point to develop viable crew procedures and techniques for circling approaches. One word of caution. All information presented was based on no-wind conditions. Proper wind corrections must be applied to all headings, times and speeds if you expect to realize the planned ground track. Also, applicable tech orders and FLIP should be consulted for specific aircraft categories and proper maneuvering configurations and speeds. The bottom line is you must take the initiative to develop useable procedures, discuss required coordination with other crew members and most important of all, practice inflight whenever possible. **FLY SAFE!**

About the author. A command pilot with over 3000 hours, Maj Jeffcoat is currently head of the CFIC KC-135 Branch at Castle AFB. After graduating from UPT in 1973, Maj Jeffcoat was assigned to Robins AFB until 1980. He was subsequently assigned to Castle AFB where he has served as a 93 BMW Flightline IP, CCTS Academic Instructor, and CFIC IP.



CROSS CHECK
SIFC

From Kitty Hawk to STAR WARS . . .

Captain Pete Katsufrakis
SIFC, Castle AFB

On December 17, 1903, the Wright Brothers ushered in powered flight. In the next 83 years, we took that simple beginning and made a quantum leap. We've seen the sound barrier broken, space exploration to the moon and planets, and now the orbital shuttle system. It seems that Buck Rogers is already here; but even he would be impressed with what's over the horizon.

Let's take a look a few years down the road, on a flight from Castle AFB to Andersen AFB, Guam. On mission planning day, our navigator will type our flight plan into a computer. The flight plan comes back as an imprinted disk with our route of flight. At base ops we hand the disk to an airman who will enter it into the system for us. As our disk is reviewed by the FAA computer, our flight plan is compared for conflicts with all other flight plans. The computer feeds back any conflicts and suggested changes to avoid the projected problem. We select the change that best meets our requirements and this is the final program that is filed. Moments later the computer will give back the disk imprinted with our route, navaids, FAA frequencies, and any other information required for the flight. In the aircraft we'll insert the disk into our navigation system. Meanwhile the navigator will fire up the fiber optic INS that our aircraft is equipped with. An inch tall and the width of a quarter, it will almost instantly align to within a few feet of our actual location. Additionally for this flight, the navigator will bring the NAVSTAR Global Positioning System (GPS) on line. Simply turn it on, let it warm up, wait for the "ready nav" light and launch.

The copilot will no longer put the clearance on request with ARTCC as this is automatically done one-half hour prior to takeoff by the Flight Data Entry Printout (FDEP). One thing to remember is that the flight plan will then be locked into the system. The only individual who can call up the flight plan is ARTCC, therefore, to change our flight plan we will have to refile or airfile. As our aircraft lifts off headed for the Pacific, we'll be passing near the massive West Coast Flight Service Facilities.

Many years ago the National Airspace Plan changed the way we do business as we "fly the friendly skies." The changes started as soon as we got to the airplane, which is now equipped with a management computer and CRT that is linked to the FAA system. Prior to takeoff the CRT will present our clearance directly from the FAA computer, without any voice transmissions. As we continue our climbout any contacts with ATC will be through our Mode S, which in addition to providing the normal AIM functions, also provides information transfer. Essentially, our airborne computer continually talks to the FAA computer relaying any directions or requests through the CRT.

Included in the National Airspace Plan was the replacement of individual flight service facilities by three regional stations located on each coast

and in the center of the nation. We still receive the same services, in the same places, only the information will come through remoted systems.

Upon reaching our final cruising altitude and with the West Coast dropping behind, the GPS becomes our guide. Consisting of 18 satellites orbiting the earth, the GPS provides complete coverage of the planet's surface. Its capabilities include precise vertical and horizontal position, velocity, and time information. The system guarantees a position accuracy of 50 feet, but in actual operation was tested well inside this limit. The groundspeed readout is good to within a half knot and the atomic clocks on board the satellite are accurate to plus or minus one second every 36,000 years. A variety of receivers are designed to pick up the transmitted signal. They range from the Army man-portable packs that receive a single signal and provide only position, to our aircraft's GPS system which receives the multiple signals required for position, speed and time. Should a conflict arise enroute to Guam, the entire GPS system can be coded to prevent unfriendly forces from using the system against us.

The navigator will monitor the fiber optic INS and GPS waypoints to ensure that the system's limitation, crew induced error, is reduced. The accuracy of the system, especially for instrument approaches, requires latitudes be inserted to the seventh digit and longitudes to the eighth digit, thus the potential for error requires close attention. To make this overwater flight easier, the requirement for the copilot to make position reports has been replaced by automatic position reporting by the GPS.

As we approach our air refueling, onboard readouts provide wind and drift angle. By entering air refueling points as waypoints with required altitudes and times, the vertical situation display (VSD) will present a three dimensional guide to precontact. The VSD is a CRT that generates all the symbology required. In extremely simplified terms the VSD has a command steering symbol (CSS) which appears as a cross. The horizontal portion is the "glide path" and the vertical portion the "course" meet. By flying the aircraft symbol on the display to the center of the CSS we are "on glide path and on course." Additional readouts on the VSD provide pitch and bank, ground speed, radar altitude, and time/distance to go. The GPS additionally provides speed adjustment requirements to make the waypoint at the designated time. By combining the capabilities of the GPS and VSD the pilot flies his command steering information much as he would if flying an ILS and with speed corrections pulls up behind a tanker within one wingspan of his "target." With our tanker operating on the same GPS, the differences in where our INSs "think" they are is eliminated.

"As we approach Andersen AFB, we talk to Guam Center's controller who is actually sitting in Oakland Center in the large ARTCC facility in Fremont, CA."

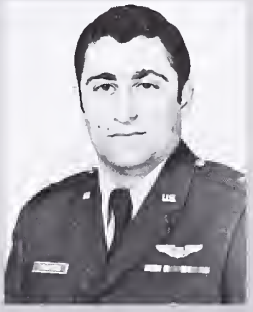
As we approach our destination, Andersen AFB, Guam, we talk to Guam Center's controller who is actually sitting in Oakland Center in the large ARTCC facility in Fremont, CA. Some time ago Pacific ARTCC locations were remoted back to the CONUS with radar and communications relayed to Fremont.

Depending on our training requirements we could perform either a GPS approach or the microwave landing system (MLS) approach which replaced the ILS as ICAO standard in 1990 and was primary for SAC around 1998. The old ILS was limited to 40 channels, suffered from expensive site preparation, and sensitivity to glidepath reflections and terrain interference. Our new MLS system is far more versatile. We can receive 200 microwave frequencies on narrow guidance beams operating 60° either side of centerline, 30° vertical and with a glidepath that can be set from 0 to 20°. Reflected energy is sensed by an internal clock which prevents the signal from being displayed to the pilots, allowing the MLS to provide curved or segmented approaches. Since the copilot needs an MLS for training, we request this type procedure from approach control for our full stop on "the rock."

If we had chosen the GPS, a series of waypoints and altitudes would be entered from the GPS approach plate. Again, as we did with the tanker during rendezvous, we fly the Command Steering for a perfect precision course and glidepath to landing using only the GPS and no other external signals, so the limitations of the old ILS are eliminated. However, our crew again must be careful on entering data from the approach plate, since it is to this data the aircraft will be flown.

By combining MLS and GPS or INS we enter waypoints and fly a curving, descending MLS to touchdown. The aircraft is equipped with a CRT which displays the relationship of the aircraft to the waypoint, runway, and a DME readout providing range to the transmitter. Again we fly the Command Steering locked in to the MLS signal and GPS or INS waypoints to a perfect touchdown and a time honored tradition of the ice cold beverage after a long flight.

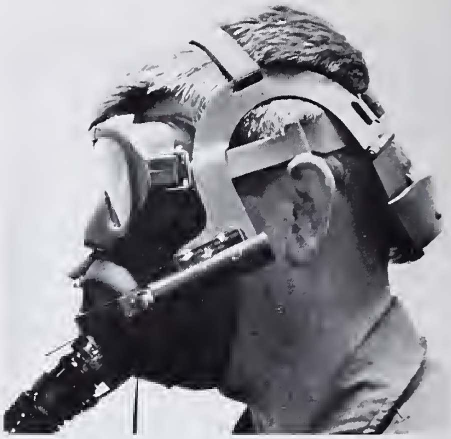
Although we have looked into the future, there is some "magic" currently out in the field. The vertical situation display and the FDEP are paving the way to future instrument flight in the 21st century. **Hold on to your hats!**



About the author. Capt Katsufrakis is an AFROTC graduate of the University of Oregon. He is a 2000 hour B-52 IP from Andersen AFB, Guam, with extensive experience in ICAO operations.

Smoke Goggles

Lt Col Bing Wepfer
HQ SAC, Chief, Flight Safety Division



Smoke and fumes are always a cause for concern, but when they occur in an aircraft they quickly become more than just a concern. In the past, flight crew protection has dealt mainly with respiratory protection while checklist procedures have been developed to eliminate smoke and fumes. Safety reports indicate, however, that only a few seconds may pass before a cockpit fills with smoke or fumes. During this critical time, the crew is busy donning oxygen masks and cannot begin to accomplish the appropriate checklists. The result has often been that once oxygen masks have been donned, the crew has been severely hampered in their attempts to eliminate the smoke or fumes because their vision is impaired by the very smoke they are trying to eliminate.

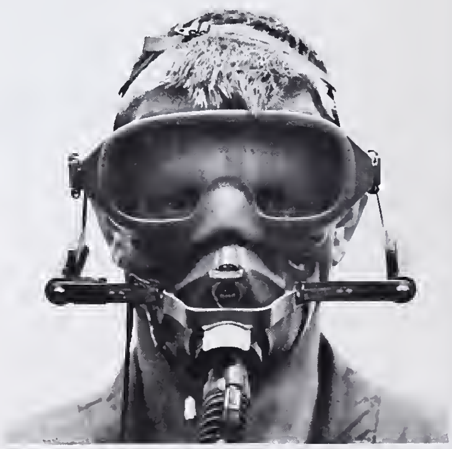
> **"Over the years, both civilian and military aircraft have been involved in incidents in which smoke and fumes affected the performance of the flight crew."**

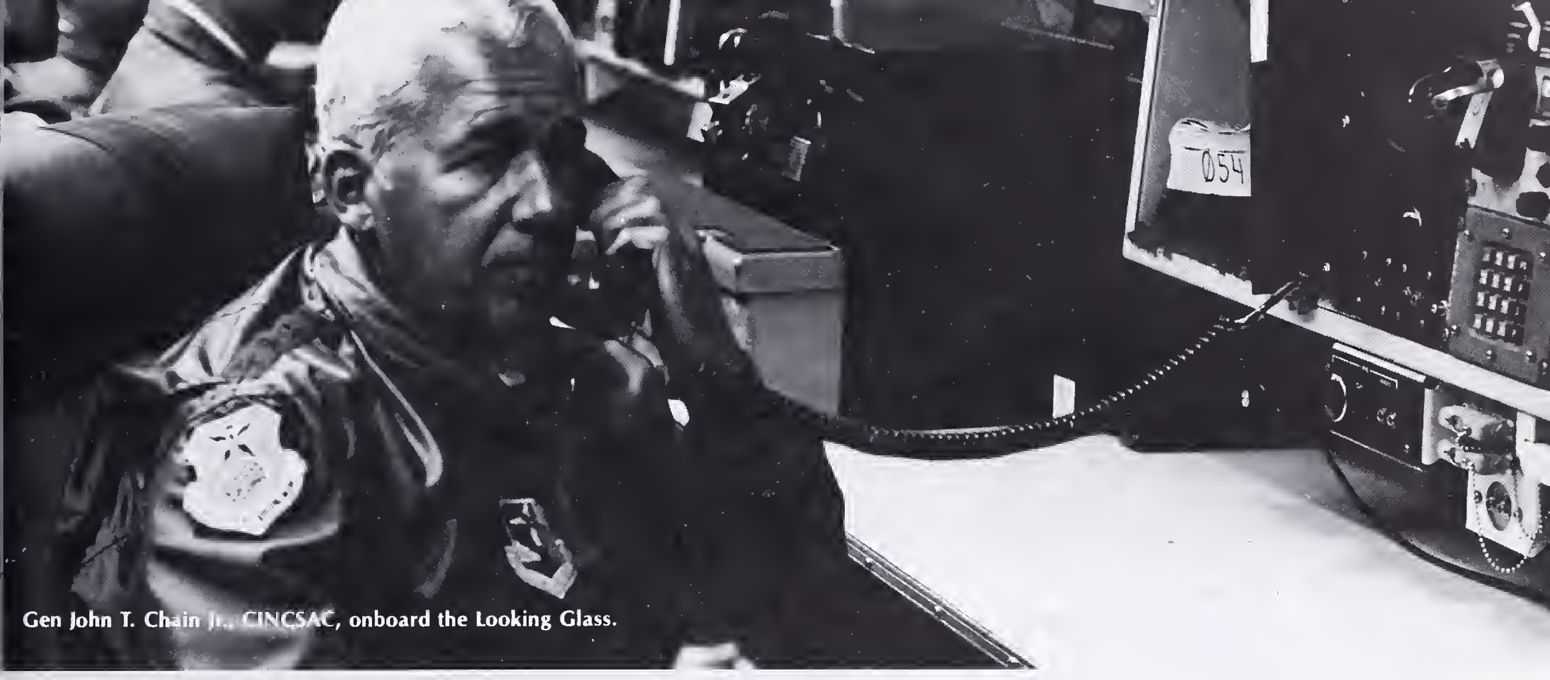
Over the years, both civilian and military aircraft have been involved in incidents in which smoke and fumes affected the performance of the flight crew. After three such mishaps in another command, a comprehensive review of smoke and fume elimination procedures for SAC's aircraft was undertaken. Checklist procedures were extensively reviewed and although inflight tests of our smoke and fume elimination procedures are still pending, one positive result of the review is about to take place.

Enhanced aircrew protection in the form of eye goggles began arriving in January at field level Life Support Units. These goggles are worn in conjunction with the quick-don oxygen mask and will provide the vision protection necessary in a smoke or fume-filled cockpit environment. They look much like ski or motorcycle goggles with a gap between the bridge of the nose and the goggle seal. Oxygen from the quick-don mask flows into this gap and clears smoke and fumes from the goggles.

The effectiveness of the new smoke goggles was tested recently by a MAC aircrew in an actual inflight situation. Shortly after takeoff, heavy smoke and fumes began to fill the cockpit. The aircrew responded to the emergency by donning their newly installed quick-don oxygen masks with overpressured smoke goggles. They had no problems donning the equipment and stated the mask and goggles proved to be highly effective in providing protection. With the equipment on, they were able to perform their duties and safely land the aircraft without damage or injury.

Initial procurement will provide sufficient quantities of this new combination of quick-don masks and smoke goggles to equip the pilots' positions of our passenger-carrying aircraft. Also included in the initial purchase is improved protective equipment for each fire-fighter's station. Training in the use of this welcome safety improvement will be provided by unit life support agencies during periodic Combat Survival Training.




Gen John T. Chain Jr., CINCSAC, onboard the Looking Glass.

Looking Glass Opportunities

Maj Ken Hurt
HQ SAC/XOXO

Attention, aircrew officers: Are you ready for a different, yet rewarding job — interested in expanding your knowledge of the SIOP and SIOP execution procedures — like all your sorties to be operational missions — be interested in being CINCSAC's Airborne SIOP advisor? If your answer to any of these questions is "YES," then read on.

The 55th Strategic Reconnaissance Wing, 2d Airborne Command and Control Squadron at Offutt is in need of SAC combat crew members of all specialties. Those people who qualify for this MAJCOM Special Activity job will have their records reviewed by HQ SAC/XO personnel. Once approved by the SAC/XO, that individual will be notified of his/her selection as an Airborne Command Post (Looking Glass) Operations Planner.

People considered for this position include: Tanker, bomber, and recce instructor navigators, electronic warfare instructors, all SAC instructor pilots, and Titan or Minuteman crew members. Job prerequisites include: two operational tours of duty within your specialty: wing staff experience; good OER's; PME completion for your career phase point; working toward or completed master's degree; and a volunteer statement for this three year controlled tour.

While airborne, Operations Planners act as the Airborne Emergency Action Officer's (AEAO) SIOP advisor. AEAO's are SAC general officers ranging from Air Division Commanders through CINCSAC. The planner also monitors SAC alert force generation, crew status, and locations. The Ops planner is the director of the airborne planning staff. Planners are responsible to the AEAO for all reconnaissance, bomber, tanker, missile, and submarine activity. When chosen for this assignment, an individual will be required to update his/her Special Background Investigation (SBI) for security clearance. The officer will have to pass a Class III flying physical, undergo Air Force altitude chamber training, and qualify with the .38 caliber pistol. Once these preliminary actions are completed, a 12-week on-the-job training session begins. During this phase each student will fly ten operational Looking Glass sorties under the supervision of a qualified instructor.

After initial training and certification, the individual will begin a very rewarding job as an Operations Planner. Subsequent to this controlled tour, many planners advance to SAC Headquarters assignments. For those who would prefer to work in the shadows of Mount Rushmore, we can provide the same opportunity in the 4th Airborne Command and Control Squadron at Ellsworth AFB, SD.

If you would be interested in this mid-level career development opportunity contact Major Ken Hurt, HQ SAC/XOXO, Offutt AFB, NE 68113, AV 271-3437. He will be pleased to discuss this career opportunity and if you qualify, start the assignment process.

About the author. Maj Hurt is currently working at HQ SAC/XOXO. He is the Headquarters functional representative to the 2ACCS and 4ACCS Operations Planners. In this capacity, he coordinates Post Attack Command and Control System issues amongst the SAC staff and provides unit operations planners guidance relative to Looking Glass operations.

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About six or seven years ago, a C-130 from one of our Latin American allies ditched at sea off the eastern seaboard of the United States. It was a noteworthy event for two reasons: Not only was it the first successful ditching at sea of a C-130, but it also **NEVER SHOULD HAVE HAPPENED.**

No accident should ever have to happen, but this particular incident wasn't really what you would call an accident. That is, it wasn't due to any mechanical or electrical failure or malfunction. *The airplane simply ran out of fuel.*

A year or two later, the same circumstances were nearly repeated by a USAF crew. Had they needed another 30 minutes to reach the coast, they would not have made it. Had ditching been necessary, they might not have been as successful as that first C-130 crew.

Fate was kind, but with the exception of a few details the following story is what might have happened had Lady Luck not narrowly intervened.

Fear overtook Hillerman as he carefully scanned the fuel gauges. The totalizer indicated 4,800 lbs of fuel remaining. Instinct told him he should have headed for St. John's. Maj. Tom Hillerman grew visibly more worried.

"Don't worry about it, sir, we'll make it. We've always managed to squeeze out of tight places before. Besides, I've got faith in this old box lunch bomber." Sgt. Mike Weller, the flight engineer, appeared more optimistic than the rest of the crew, but deep inside, he too was beginning to feel more jittery by the minute. The mission that began without a hitch, was now rapidly losing its appeal.

Earlier that morning, after the airplane was serviced, Hillerman had notified Operations the airplane was ready for departure and they were ready for passenger boarding. A few minutes later, the shuttle bus dropped three people in front of the aircraft, and Watch 97 departed Rhein-Main Air Base at 0620.

ETY

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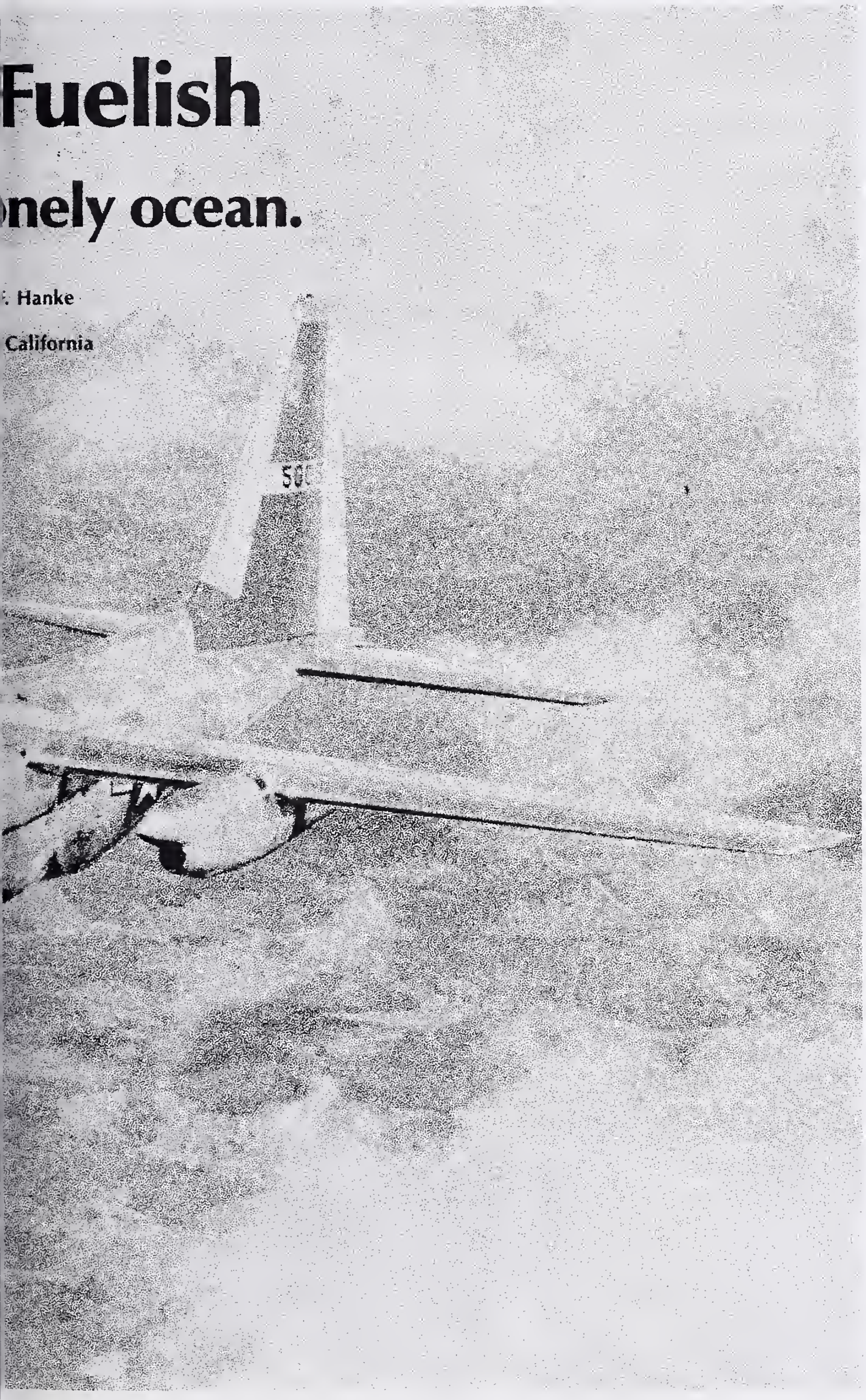

But before the big hop across the pond, Watch 97 stopped at Lajes Field in the Azores for refueling. The old 'A' model doesn't have the range of the newer C-130s, so Lajes Field and St. John's in Newfoundland were necessary waypoints for most return flights. But this trip would be a little different. Navigator Tony Santini calculated the St. John's stopover wouldn't be necessary this time; they could make the run straight from Lajes to the United States with fuel to spare. That way they could cut one day off the trip by bypassing Newfoundland.

"You're absolutely sure we can make it, Tony?" Hillerman recalled quizzing the navigator earlier that morning.

"No sweat," guaranteed Santini, "tailwinds are with us today."

Capt. Tony Santini was a confident navigator. Maybe a little too confident. He was the type who rarely made mistakes. The type who tries to get by on the least amount of effort required to get the job done — and for some things that's okay — but navigating a multimillion dollar airplane around the globe isn't one of those things. That didn't matter to Tony Santini, though. You see, he hadn't learned that lesson yet. He would have to learn the hard way.

Santini was one of those Ivy League graduates — clean cut, athletic, and fiercely competitive. Stereotypically so. No one could tell him what to do or how to do it. No one could tell him anything.

He always appeared cocky and a little too sure of himself. Whatever the situation, Tony Santini attempted to take command of it. He always had to be in charge and run things his way. He accepted advice from no one — "Wise men don't need it," he'd always said. Unfortunately, he forgot the other half of the old saying about advice: ". . . and fools don't heed it." *That was Tony Santini.*

And when it came to navigating an airplane, he got by on only what he had to do, his way. Practicing celestial shots was ancient and unnecessary according to his philosophy, and ADF fixes were "stone age." He even joked about being a "naviguesser." *That was Tony Santini.*

Now, a little more than an hour from the U.S. coast, the fuel remaining was down to 4,800 lbs — barely enough to "squeak in," with luck. If they made it, there would be a lot of questions to answer. No doubt heads would roll.

Minimum fuel should be at least 6,000 lbs overhead destination, but we'll be lucky to have 600, thought Weller. There'll be hell to pay, that's for sure. And I'll probably get the blame!

Hillerman mulled over the past few hours in his mind, wishing he'd paid closer attention to his instincts and filed for St. John's like he wanted to in the first place. Below normal headwinds were expected, and they should have been able to make the run straight from Lajes. The 36,000 lbs of fuel that the C-130 held should have been plenty. But there were too many "ifs" and "should haves," and hindsight wasn't going to help them out of this one.

Groundspeed had dropped slightly below what they'd calculated for the first hour or two of flight, but he'd decided to press on anyway. Santini assured everyone the airplane would still make it with no problems. But now, the crew of Watch 97 wasn't so sure about that. And Tony Santini appeared to be losing some of his confidence. Hillerman wondered if he hadn't made a big mistake today. Or several mistakes.

Tom Hillerman was a topnotch pilot. One of the unit's best. No one ever questioned that. Hillerman himself knew that his own abilities far exceeded some of his peers'. He'd been a C-130 aircraft commander for almost seven years and loved every minute of it. His safety record was outstanding, and he had even saved an aircraft from destruction three years earlier on a routine night training mission that ended up not-so-routine. But he also knew he was fallible, like all humans. That was one of Hillerman's good points. He never put himself above anyone, and he always relied on other crewmembers' abilities to do their jobs. Putting his faith in his fellow flyers' abilities, he called it. Maybe he shouldn't be so trusting, he thought . . .

Turbulence brought Hillerman back to reality.

"Well, you guys know how notoriously unreliable these fuel gauges are," suggested Hillerman's copilot, Capt. Neil Dietrich. "These old 'A' model fuel gauges aren't exactly known for their precision, you know." He studied the fuel panel thoughtfully, not really believing what he'd just said. "They always have more than they actually read," Dietrich added with some hesitation.

Unfortunately, he forgot the other half of the old saying about advice: ". . . and fools don't heed it."

"Well, I've never seem 'em lie, other than an occasional malfunction, and besides, I'm not sure I like the idea of testing your theory at this point," stated Hillerman matter-of-factly. He continued, "Sure, we joke a lot about their accuracy, but right now that's of no consequence. What we've gotta do is figure out how to get out of this mess before we make like a submarine."

"What about shutting down the outboards to conserve fuel," offered Weller.

Hillerman paused. "Well, I don't know about that. It would probably do more harm than good. Let's just shut one down and try to keep this thing trimmed up straight for now, and pray for the best." Hillerman had the copilot feather the number-1 engine.

The groundspeed indicator had clicked its way down another 10 knots in the last 20 minutes, and Tony Santini had felt each click penetrate his soul as though they were punch marks for his ticket through the pearly gates. The increased drift made matters worse. Tony Santini's confidence was nearly gone.

"I . . ., look guys," Santini stammered slowly. "I'm sorry for this mess, but I didn't know . . . . I didn't think this would happen. I thought we'd be able to make it. I was sure we'd be able to make it." He felt ill at ease admitting any responsibility at all, but he knew their predicament was at least partially his fault.

"Yeah," Hillerman began, "I suppose I could make a big speech about how you screwed up and all that, or about how I am going to wring your neck when we get back, but the truth of the matter is we're all in this together. In our great desire to save time getting home, none of us questioned your judgment. We've made this run before. Several times. We all knew what we could and could not get by with. Sure, we skipped St. John's once before and made it, but right now that's irrelevant."

Hillerman paused briefly and continued: "We took a chance. We all figured it'd never happen to us. It was an unspoken chance, but nevertheless a chance. No, Tony, it's not all your fault. We share equally in the blame."

No one else spoke and another 20 minutes dragged by. The loadmaster paced nervously in the cargo compartment as he broke out his remaining pack of cigarettes, offering one to everyone. He was intent on smoking the whole pack while he still had the chance. No one needed to ask Rick Velasco if he was nervous, and he made little attempt to hide his fear from the three passengers.

The outboard **TANK EMPTY** light for the number-4 tank blinked momentarily, then lit up. The number-4 fuel quantity indicator read barely more than 300 lbs. The number-1 tank had already transferred dry, and all engines were still running normally except the one Hillerman had shut down earlier. The inboard needles showed about 500 lbs each. Barely enough for half an hour, if that.

"Neil, make the call." Hillerman was sure now. "Call in a **MAYDAY** and tell 'em we're going to ditch. We're not going to make it, we're too far out. Tell them we'll need the Coast Guard standing by for a rescue. Loadmaster, strap everything down and make sure our passengers are buckled in safely and know what they have to do. Prepare the emergency exits, then everyone strap in and prepare to ditch. At best, we've got about 25 minutes left." Hillerman stopped briefly while he checked his overhead panel.

"As far as I know, only one other C-130 has ever successfully ditched at sea. We're going to be the second."

No one else said anything and 20 minutes later the number-4 fuel quantity indicator touched the zero mark. A few seconds after that the number-4 engine quit. The copilot quickly feathered the propeller.

"Well, Neil, there goes your theory about the accuracy of those gauges," noted Hillerman.

"Yeah. Too bad we had to learn the hard way," said Dietrich, "they appear to be quite accurate."

"A little too accurate," added Weller quietly.

With slightly more than 200 lbs of JP-4 fuel remaining in the inboard tanks, the crew prepared for the watery landing. Hearts pounded rapidly as fear of the inevitable loomed closer than they liked to think. The screaming of the remaining two engines was no longer comforting.

The AC noted the altimeter needles as they passed through 850 ft on their way down. Seven minutes later, the number-2 engine died and Hillerman ordered both feathered simultaneously to enable the C-130 to contact the surface of the sea as cleanly as possible. The silence was frightening.

As the five crewmen and three passengers braced themselves for the roughest landing of their lives, they never saw the 60-foot swell grab the left wingtip and violently wrench the airplane from its planned trajectory. The flimsy metal structure was no match for the powerful forces of nature, and the Herk cartwheeled crazily through the rough sea, pieces flying in every direction. A thousand yards from impact, the mangled hulk of airplane — what remained of it — came to rest and sank rapidly below the waves.

(Thanks to *MAC Flyer,* July 1986)

About the Author. Following his active-duty Air Force service, which included tours at Tuy Hoa AB, Vietnam, Clark AB, Philippines, and McGuire AFB, NJ, Sergeant Hanke joined the Rhode Island ANG in 1973. His experiences with MAC maintaining C-141s and C-130As ended in March 1985, when he accepted a job as an Avionics Instrument Systems Technician with the California ANG working on the F-4C.

Battle of Barksdale

1Lt Jeff A. Triphahn
Barksdale AFB

Martin B-26 Marauder

Project Warrior

The flight line at Barksdale echoes today with the roar of the SAC aircraft which call this air force base home. Giant B-52s, KC-10s and KC-135s lumber down the runway in observance of SAC's continuous goal of strategic deterrence.

Many years ago a much different cacophony reverberated throughout the lush Louisiana countryside as propeller-driven B-26s soared through the skies. It was World War II and Barksdale AFB served as an Air Corps Flying School. Pilots flew the big Marauder bomber in training for the day they would steer a course toward enemy targets. A 1943 excerpt from the magazine, "Barksdale Bark," describes what it was like to fight the "Battle of Barksdale."

Every time a group of B-26 Marauders completes a successful mission against the Axis, a small group of specially selected airmen at Barksdale swell with a pardonable bit of pride before resuming their duty of sweating out the "Battle of Barksdale."

The airmen are instructor pilots, who feel that they have played a part in the success of these vital missions, because it's an odds-on bet that wherever you find Marauders, you'll also find pilots who were trained at Barksdale. Teaching others B-26 combat tactics is not an instructor pilot's idea of fighting the war, and he gripes continually about his lot.

The story of training Marauder pilots could be told by any of the instructors, but they are a quiet, unassuming group who take their work seriously, and talk and dream only of the day when they will get a chance to carry the battle personally to the enemy.

Eventually they may get that chance, but for the time being they must be content with what they call "the monotonous job" of teaching fledging pilots how to fly the B-26 in the accepted fashion. "It's a tiresome, workhorse assignment," one instructor commented, "but not without excitement. Whenever a student, flying at high speeds, makes a miscalculation, we get all the thrills we want."

"Don't think that combat fliers just spring forth one bright morning fully prepared for battle. Most of them were never inside an airplane before the war, and since then someone, someplace has taught them the essentials of using the mighty B-26 to the best advantage. That's why we feel that we play a remote part in bombing Tokyo and Berlin."

Each instructor has four students assigned to him at a time, and it is his job to turn out skilled combat pilots in the short space of eight weeks. "Our most difficult job is to get the new pilots to fly the plane the way we at Barksdale know is best," Major Charles H. Seawell, 475th Operations Officer and veteran instructor, said. "We know our way is right for we have an unusually low accident rate to back us up."

Some of the pilots who report here for final combat instruction have previously been checked out on B-26s at other fields. The rest are men fresh from flying school. Instructor pilots seemingly have no preference which type of student they get, for the progress in the course depends entirely on the individual. A semitrained pilot makes a good student, they agree, if he is open minded in accepting suggestions, but the bugaboo is the man who has just won his wings and thinks he knows it all. But no matter what the situation, the instructor pilots press on until each student is ready for overseas assignment.

Teaching methods are adapted to the student. "We make them unlearn a lot of things and kill their bad habits," an instructor stated, "and at the same time teach them new methods. We've got to do a good job, for we all know that a dead pilot is no threat to the Axis.

One of the first lessons the new pilot must learn is to respect the B-26. It can't be kicked around like a fighter and daredevil pilots are told they have no business doing "their stuff" in a Marauder. It's a darned good bomber and must be treated like one.

After a few hours in the air with a new student, instructors can almost determine whether the man will make a good pilot or not, for they study his reactions in the plane and the manner in which he takes his preliminary instruction. Consequently, instructors soon become good judges of the men they are to teach.

Following a session in ground school, the new pilots are assigned to their instructors who take them aloft to acquaint them with the traffic pattern, to shoot a few landings, and to instruct them in cockpit procedure.

From then on things wind up fast for the student pilot, but for the instructor it's the same old stuff. First they sit through operations meetings, then they take to their ships and sit by during long hours of flying, patiently coaching their pupils and remaining constantly on the alert to take over immediately in case of trouble.

That's where the "thrill" of instructing comes in, for no one should get the notion that there is no danger in the "Battle of Barksdale."

"Our instructors prevent at least half a dozen accidents every day by knowing exactly when to take over the controls," Major Seawell declared.

B-26s are big airplanes which need plenty of power to keep them going. Many of the near-accidents occur when one engine has been "feathered" and the pilot is obliged to keep the plane flying on the other engine. Despite rumors that the Marauder will not fly with one engine out, the fact has been proven in combat that it will fly single-engine, and the instructors teach that maneuver as part of the course.

Recently when a student pilot was preparing to land and a motor went out, he exclaimed to the instructor, "It's all yours" and then let go of the controls. The instructor took over and landed the ship safely.

On another occasion when a student was piloting a plane with one engine "feathered," he mistakenly touched the switch controlling the other engine, and the Marauder was left powerless in the air. There was a mad scramble as the crew grabbed their chutes, but fortunately the instructor got the motors started in time to avoid a crash.

Shooting landings, prop wash, and instrument flying give students the most trouble. Some want to land the big ships too slowly and others too fast, and it is the problem of the instructor to teach them to judge correct landing speed. During instrument instruction the tendency with the student is to try too hard. Therefore the instructor must turn psychologist to make the student relax and not "fight the controls." Often the instructor, after other methods have failed, will let the student get in a tight spot just to scare him out of a bad habit. If a student is coming in too steep for a landing, although he had been warned many times, the instructor will permit the student to continue until he is white with fear before the instructor takes the controls and pulls the ship up — seemingly just in time. One lesson of this type is usually enough. The student seldom forgets after that.

There is danger too that when one engine is "feathered" the student will "kick the rudder" the wrong way and literally flip the big bomber over on its back. The alertness of the instructor is necessary in such an emergency, for he must take the rudder away from the erring student in time to prevent an accident.

How is it that instructors have been able to compile such a fine record with so few accidents?

It hinges on the way instructor pilots are selected for their important but unromantic work. They are chosen from among the students themselves, but contrary to popular conception, they are not necessarily the "hot" or crack pilots. Rather they are the men who, as students, demonstrated a basic knowledge of the Marauder and seemed to have the faculty of imparting that knowledge to others.

Instructor pilots know exactly what the airplane will do under any condition and they are constantly on the alert to see that it is never put to strains beyond a reasonable margin of safety.

Instructor pilots may not wear medals but they are the heroes of the "Battle of Barksdale." These men who ride the flying schoolrooms day and night make it tough for the Axis by giving stronger wings to the fledging pilots who tomorrow will be steering a straight and secure course toward enemy targets.

About the author. 1Lt Triphahn graduated from Southern Illinois University at Carbondale in 1983 with a B.S. in Business and Aviation. After completing UPT at Reese AFB and then combat crew training in the KC-135, he arrived at Barksdale AFB in October 1985 where he is currently assigned as a KC-135 copilot.

Hear Ye! Hear Ye!

SAC is hereby pleased to announce that 1986 was a tremendously successful and safe year.

Lest there be any doubters, know ye that:

- Only one Class A aircraft mishap occurred in 1986.
- Only one operational Class A missile mishap was posted.
- Ground fatalities were reduced by 43% to an all-time low.
- For the second year in a row SAC recorded no bomber Class A mishaps.

Ye safety efforts are working extremely well. Congratulations, and remember *"Safety is a state of mind."*

"We're Diverting Where . . .?"

1Lt Robert S. Hopkins, III
70 AREFS, Grissom AFB

Briefing an alternate airfield during mission planning day is usually the closest most crews get to actually seeing a divert base. Occasionally a mission or two ends up with a divert to another SAC base or, at worst, another military airfield where competent help is readily available. In these situations common sense will help alleviate difficulties and expedite the ensuing departure.

The divert problem becomes more complex when a SAC aircraft is unexpectedly diverted into a civilian field, and the situation complicates even further when that civilian airfield is in a foreign country.

Most crews have little experience and guidance on what to expect during a divert to a civilian airfield in a foreign country. The reason for the divert, the uniqueness of the situation, and other pressures on the crew may challenge good judgment in assessing and coping with such an event.

The following was gathered from first-hand experience during such a divert. A KC-135 crew from a CONUS base diverted for low fuel to a foreign civilian airfield following a heavy offload during a CORONET deployer to Europe. The crew consisted of a highly-experienced aircraft commander with previous experience in international operations, a new copilot, and a seasoned navigator and boom operator. Two crew chiefs were also aboard.

Through good crew coordination and careful planning the crew was able to refuel and service the aircraft, deal with customs and other foreign administrative problems, depart, and return to their CONUS base in under six hours.

The following guidelines identify the variety of problems which may confront a crew diverting to a location which may be totally unprepared both logistically and administratively to handle a heavy SAC aircraft. Use these guidelines as a framework to develop your crew's own divert plan.

Decision to Divert. Make the actual decision to divert as early as possible. Plan to use either the prebriefed divert base or another suitable alternate as the situation may dictate. Regardless of which base is selected, once the decision to divert has been made, STICK WITH IT.

Develop a Game Plan. Once the divert decision is made, establish an agenda of tasks to be fulfilled after landing. (Mission planning on alert is a good time to preplan most responses to these.) Use this as a checklist yet remain sufficiently flexible to allow for unexpected problems which are sure to surface.

Soon after landing you'll be asked "From whom do you wish to buy fuel?" Now is the time (and not while taxiing in) to check the Dash One to determine preferential fuel and alternates (and any other names by which they're known). Also determine ground power requirements. Knowing this now will facilitate parking after landing and expedite servicing of your aircraft.

Review the **IFR Supplement** for any special advisories about the airfield which may affect your actions on the ground. Plan now to "gas and go" or to spend the night as crew duty day, maintenance needs, and other requirements dictate. If time permits, contact the "home drome" command post for guidance and solicit any recommendations which they might have.

Take a few minutes to brief one crew member on ground procedures during engine shutdown. Never assume that transient alert personnel will be familiar with your aircraft and specific problems unique to it. The boom operator or gunner is the best choice in lieu of a crew chief.

Land the Airplane. Brief the approach in accordance with established procedures and accomplish all necessary checklist items prior to landing.

Weather information may be given in degrees Centigrade and meters so don't hesitate to ask early to allow the copilot time to convert to more familiar units for preparing landing data. The **Flight Information Handbook** has conversion tables you can use. Language may also be a barrier requiring repetitive radio transmissions. There may exist a high potential for misunderstanding. As the old adage goes, "When in doubt, query the controller."

Use good common sense and flying skills to safely land the airplane. Unless other emergencies exist, diverting is not an emergency procedure and does not require any extraordinary or heroic measures. FLY THE AIRPLANE!

On the Ground. Once you've cleared the active runway expect a number of questions. Knowing your fuel and ground power requirements will answer most of these questions, but expect queries about customs, your need for a passenger ramp, and when you plan to depart.

Request progressive taxi or a follow-me truck and advise ground or tower of your approximate weight so that they can "steer you clear" of weight-restricted taxiways and ramps.

Shut down the aircraft as prescribed by the checklist and plan to do routine postflight maintenance yourself. Don't forget minor things such as checking the oil, inserting the tail stand, plugging in ground wires, and installing any plugs or cover.

(Right after an alert start/shutdown is a good time to have the whole crew practice postflight mainte-

The single most important consideration at the divert base, and one that requires the constant attention of the aircraft commander, is the maintenance and servicing of the aircraft.

nance and ground refueling. You and your crew may be the only ones at the divert base familiar with your aircraft and its servicing peculiarities. Know how to do it right.)

It is imperative that the aircraft commander do an extensive postflight walkaround inspection to establish the aircraft's condition and airworthiness. Write down specific problems to be passed back to the "home drome."

Administration. Here's where the copilot earns his pay as aircraft commander-in-training.

First and foremost, have the copilot close out your flight plan or confirm that it was done by ground or tower after landing.

The copilot can also meet with customs officials to acquire and complete necessary forms and advise them of your current plans. You may be asked to complete Customs Form 7507 (a passenger and crew list) or be asked to submit a copy of your flight orders.

The copilot should supervise all security measures taken by the crew and the airport. Secure all classified documents and ensure that the aircraft is properly attended.

Remember that many Eastern-bloc airliners and military cargo flights transit civilian airfields. Use good Comsec/Opsec procedures.

Attend to the needs of your crew and passengers. Is food available now and for the departing flight? When does the crew duty day expire? Are accommodations available in the event of an overnight stay? Are there any customs/duty restrictions on any items which the crew or passengers may purchase while out of the CONUS? Are there any restrictions in carrying these purchases aboard a SAC aircraft?

Maintenance and Servicing. As the single most important consideration while at the divert base, servicing the aircraft requires the constant attention of the aircraft commander.

Plan and assist with the onloading of fuel. You may plan to upload fuel in thousands of pounds only to find that the fuel is dispensed in litres, so be ready for some quick arithmetic. Again, the **Flight Information Handbook** can help.

Supervise and monitor any maintenance to the aircraft. Remember who has to fly the airplane home . . .

Plan the Departure. Give the copilot and navigator an estimate of your departure time and intended route. The copilot should order the weather briefing as soon as possible. These usually include charts and materials which take time to prepare. Since you are an unexpected arrival, you may be well down the waiting list for this service, as well as many other services, especially if the airport is busy.

Have the copilot determine local operating procedures and quiet hours. How will these affect your scheduled departure? Are there noise abatement procedures which must be incorporated into your takeoff and route planning?

Water may not be available for a water-injected takeoff so careful analysis of obstacles, temperature and pressure altitude, and takeoff weight is essential. You may not be able to take off with your desired fuel load and may need to plan an intermediate stop for fuel. If water is available be sure that it's within tech order tolerances.

File the Plan. File your flight plan home on DD1801, ICAO Flight Plan, locally available forms, or, if necessary, via landline direct to the nearest ATC facility or handling Flight Service Station.

Try to use airways on your trip home. Flying airways instead of point-to-point navigation will expedite entry of your clearance into the system whereas more complicated flight plans may require as much as two hours advance time for acceptance.

Leave a copy of your flight plan and crew and passenger lists with a responsible individual (such as a customs agent or the airfield manager) and notify the handling FSS of this after departure.

Starting and Departing. As with shutdown, thoroughly brief starting and emergency procedures. Conditions and equipment may not be optimum for engine start so watch for possible hot starts and other difficulties. Use visual signals if necessary.

Many foreign countries require a verbal clearance readback even on the ground, so copy the clearance neatly enough to be able to read it back.

Request progressive taxi and again notify ground of your weight to avoid restricted areas.

Follow checklist procedures during takeoff and departure. You may wish to confirm that your flight plan is active so contact the FSS.

Save all of your receipts and administrative materials to be turned in to your DO or his representative. Help maintenance after your return with a complete history of service given to your aircraft at the divert base.

What could be a potential nightmare can now be reduced to a busy but pleasantly memorable learning experience in a foreign country. Talk with other crew members who have experience with international operations and get their input and suggestions. Determine if your unit has a specific divert procedure checklist and become familiar with it. Take the time to review AFR 60-16 and other directives for your obligations during operations from foreign civilian fields.

Dealing with a foreign field divert calls for more extensive preparation than simply reviewing an ILS approach to a strange airfield. Thinking through the potential problems long before you find yourself on final approach can significantly reduce your headaches after landing and make for a safe and expeditious departure.

About the author. Lt Hopkins was commissioned through OTS in 1984 and completed pilot training at Laughlin AFB, Texas, in 1985. He is currently a KC/EC-135 copilot with the 70th AREFS, 305th AREFW, Grissom AFB, Indiana.

PROFESSIONAL PERFORMERS

Flying Crew

Recently, Capt Jonathan D. George, 9 SRW, Beale AFB, took off from an overseas location on his first U-2 operational reconnaissance mission since becoming qualified in the aircraft. Everything was normal for the first three hours. Suddenly, with the aircraft cruising above 60,000 feet, the autopilot disconnected and the pitch trim ran full nose down. The aircraft pitched over and exceeded the maximum allowable Mach limit, entering an aerodynamic regime from which few U-2's have ever been recovered. Capt George immediately grabbed the yoke, somehow pulled the aircraft out of its steep, nose down attitude, and began attempts to correct the situation. He tried to reposition the trim, but found that the system would edge slightly towards the neutral position momentarily, then return when the switch was released. He attempted to obtain what little nose up trim was available and then disconnect the trim system electrically, but the trim power switch did not function either. Contacting his control agency, Capt George aborted his mission, lowered his landing gear, and began a slow descent toward home. During the descent, he was forced to "bear hug" the yoke for nearly an hour to prevent the aircraft from pitching over. During this time he had to fly the aircraft at an approach-to-stall airspeed to lessen aerodynamic forces, but still had to hold an estimated 30-50 pounds of pressure on the yoke to prevent loss of control. As the fatigue from that effort began to take effect, it became impossible to release one of his hands to activate cockpit switches for routine descent and landing procedures. After approximately one hour, he arrived at his recovery base. Due to tremendous fatigue, muscle cramps, and other physiological problems related to heavy exertion while completely enclosed in a full pressure suit, he was unable to further configure the aircraft for a normal landing and still retain control. He executed a spiraling approach to the field and flew a perfect no-flap approach to a full-stop landing. He was carried from the aircraft by the recovery team and admitted to the hospital for severe muscle strain and exhaustion. Captain George's superior airmanship and dogged determination resulted in the safe recovery of an extremely sensitive and valuable Air Force aircraft.

Missile Maintenance

A1C Neil R. Ebbenga, 341 SMW, Malmstrom AFB, is SAC's ICBM Maintenance Airman of the Month. Assigned to the Electro-Mechanical Team Section (EMT) A1C Ebbenga is a true professional in every sense of the word. He was selected as an EMT team chief with only nine months of field experience. As a team player, he volunteered to dispatch on Christmas Eve to repair a launch facility to allow a camper alert team to spend Christmas at home. A1C Ebbenga received a Professional Performer Award from 3901st Strategic Missile Evaluation Squadron (SMES) for efforts "above and beyond" while under evaluation and also two "Highly Qualified" task ratings. He showed exceptional maturity when as a witness to a vehicle accident, he quickly coordinated immediate first aid and notified civilian authorities of requirements. This quick thinking while under pressure defused a possible life-threatening situation. A1C Ebbenga is an energetic and dedicated young professional and a valuable asset to the SAC ICBM force.

Aircraft Maintenance

Missile Crew

The 321 SMW Crew E-019, Capt David R. Forstner, MCCC, and Capt Robert E. Lally, DMCCC, is SAC's Missile Crew of the Month.

While on alert at LCC E-0 recently, Crew E-019 received notification from the maintenance team chief on LF E-46 that a team member had slipped while closing the site's launcher equipment building blast door and severely broken his arm, crushing it between the door and the wall. The crew immediately reacted by implementing their contingency checklist to notify appropriate base agencies. A telephone patch was established between the hospital and the on-site team chief to coordinate emergency first-aid procedures. The crew took actions to obtain helicopter support to quickly evacuate the team member in an attempt to minimize the effects of shock. Because the injured team member could not climb up the ladder at site, the crew requested that fire department rescue personnel be dispatched with the medical team to assist in evacuation. Due to the LF's 100-mile distance from the support base (even by helicopter), Capt Forstner required immediate civilian medical assistance from a nearby town. As a result of Crew E-019's flawless handling of the emergency, the injured person received crucial medical assistance in minimum time.

MSgt James H. Daniels, 384 AREFS, McConnell AFB, is SAC's Maintenance Airman of the Month. Assigned as a flight chief, MSgt Daniels' accomplishments have greatly enhanced his wing's operational capability of the KC-135R aircraft. For example, during a local Bold Tiger exercise, Sgt Daniels' tireless devotion to duty aided immensely in launching 101 scheduled sorties on time during a three-day period. This resulted in a record 2.73 utilization rate per aircraft. The first-hand supervision of Sgt Daniels helped ensure an aircraft was launched on an average of 37 minutes during the 63-hour duration of the exercise. His ability to motivate his troops and the standard of excellence he sets for them have contributed significantly to the rapid rise of the Fully Mission Capable (FMC) rate of the wing. During the July-September 1986 quarter, the FMC rate soared to an unheard of 90 percent, well exceeding the SAC goal of 80 percent. His aircraft configuration management for aircraft deploying to the European Tanker Task Force resulted in zero discrepancies noted on unit aircraft deploying overseas.

Munitions Maintenance

SrA Mark L. Blair, 394th ICBM Test Maintenance Squadron, is SAC's Munitions Maintenance Airman of the Month. Assigned to the Explosive Ordnance Disposal (EOD) unit, SrA Blair has displayed a multitude of abilities which identify him as a superior airman and a true asset to the squadron.

SrA Blair was recently selected to aid in the research and development of new techniques in the removal of buried unexploded ordnances (UXOs) at Edwards AFB. His job knowledge and technical skill contributed to the overall success in establishing new procedures for the EOD career field. As a member of the base disaster response force, SrA Blair participated in the recovery of hazardous ordnance following the Titan 34D explosion. He was instrumental in the successful recovery of the classified payload, and he also assisted the accident investigation team in searching for and recovering the wreckage, safing the hazardous munitions components, and safely transporting and disposing of these hazardous items.

cont'd from page 6

The RC-135 crew didn't realize that their planned landing roll based on RCR of 09 would place the aircraft approximately 500 feet into the overrun. They were comparing landing ground roll to 10,300 feet of runway available when the actual runway length is only 9300 feet. This misconception was due in part to the continued and authorized use of the stressed overrun for takeoff which yields a runway available length of 10,300 feet.

The incident just described had all the potential to result in a major aircraft accident with possible fatalities. However, we were lucky to have learned a valuable lesson at a very minimal cost. The incident crew had some misconceptions about landing data and the braking technique and procedure required to safely stop the −135 within the charted landing ground roll. The same misconception may be common throughout the −135 crew force.

The purpose of this article is to start a re-educational process (where and if required) to emphasize the fact that −135 series landing ground roll charts are based on a braking procedure using maximum pedal deflection. This will vary some dependent on what type of brakes your aircraft has installed. The information already exists in the applicable −135 Dash 1; therefore, a re-emphasis may be required to all −135 users. Furthermore, we cannot overemphasize the importance of using the runway available for landing and comparing that to Total Landing Distance (landing ground roll + flare distance with any and all corrections applied) not just landing ground roll.

We are in the middle of the winter and many of us regularly face RCRs of less than 23. It is imperative that we, as pilots, know and understand the stopping capabilities of our model −135 aircraft under less than optimum conditions. Your experience on "wet" runways cannot and must not be equated to landing on a runway with an actual 09 RCR. A "wet" runway, just a plain old "wet" runway may not yield an RCR of 09. It is never too late to get a re-education — before you **really** get a re-education! Fly Safe.

About the author. Lt Col Cook is the Commander of the 384th Air Refueling Squadron, McConnell AFB. Prior to this assignment, he was the Operations Officer for the 38th Strategic Reconnaissance Squadron, Offutt AFB. His previous assignments include KC-135 Stan/Eval IP and Chief Stan/Eval Division 55th Strategic Reconnaissance Wing, Offutt AFB. A graduate of the Air Force Academy, SOS, and Armed Forces Staff College, Lt Col Cook is a Command Pilot with over 5000 hours of flying time.

SAC SAFETY SCREEN

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1*.

71 AREFS, Barksdale Crew S-102: EP Capt Wayne L Riley, MC 1Lt Craig H Smyser Jr, EN Capt Randall L Carpenter, EB TSgt Michael L Wetzel

71 AREFS, Barksdale Crew E-134: IP Capt Douglas H Livernois, MC 1Lt James P Gordey, IN Capt Michael E Howard, MB SrA Jill Miller

596 BMS, Barksdale Crew E-75: MP Capt Timothy W Stanfill, MC 1Lt Steven W Kirkpatrick, MR Capt David C Walle, MR Capt John A Branly, MN 1Lt Rudolph H Kemmerlin, ME 1Lt Walter H Richert, MG TSgt Thomas B Lindsey

62 BMS, Barksdale Crew S-05: P Capt Harry B McCarraher III, CP 1Lt David W Bearden, R Capt Mark L Turner, N Capt Mark B Midden, EWO Capt Bruce R Beville, G SSgt Kim G Charles

7 AREFS, Carswell Crew S-126: P Capt Danny R Pegram, CP 1Lt Gary W Sherman, N Capt Phillip W Carr, BO SSgt Larry M Greenfield

9 BMS, Carswell Crew E-92: P Capt Kevin P McCandless, CP 1Lt Douglas E Fuller, RN Capt Keith A Thomas, N 1Lt James W Elms, EW 1Lt Douglas K Basiger, IG SSgt Jimmie L Reed

524 BMS, Wurtsmith Crew E-24: P Capt Roger W Mostar, CP 2Lt Patrick F McCabe, RN Maj William K Thacker, NN 1Lt Michael A Yemic, EW 1Lt John B Norris, AG Amn James P Aikman

524 BMS, Wurtsmith Crew R-16: P Capt James P Robbins, CP 1Lt David L Alexander, RN Capt Kent D Rogers, NN 1Lt Ralph D Howard, EW 1Lt Michael T Leffler, AG A1C John C Oliver

920 AREFS, Wurtsmith Crew E-135: P Capt Steven J Berryhill, CP 1Lt Phillip E Long, IN Capt Norman L Drabek, BO A1C Timothy A Pates

920 AREFS, Wurtsmith Crew E-142: P Capt David R Anderson, CP 1Lt James C McMillin, IN Capt Edward J Rosado, IB SSgt Larry E King

78 AREFS, Barksdale AFB (AFRES): P Capt John C Hildebrand, P Capt Kent M Ramey, FE SMSgt Albert P Butler, BO MSgt Rene F Hernandez

41 AREFS, Griffiss Crew S-101: P Maj Robert M Furbush, CP Capt Fred Mosher, N Capt David C Kelley, BO MSgt James D Hill

41 AREFS, Griffiss Crew R-117: P Capt Jerry D Vanslembrouck, CP 1Lt Anthony D Palhete, N 1Lt Craig R Hanson, BO SSgt Scott R Hicking

46 AREFS, K I Sawyer Crew R-122: FP Capt John A Cuzzone, CP 1Lt Michael J Cole, NN 1Lt Richard B Bamburger, BO Sgt Charles C O'Bannion

668 BMS, Griffiss Crew R-25: P Capt Robert H DeArmond, CP Capt John P Healy, RN Capt Steven L Oster, N 2Lt Charles O Eddy, EWO 1Lt James Blasingame, G SSgt Earl E Babcock Jr

11 AREFS, Altus Crew S-102: EP Capt Gary L Cooper, CP 1Lt Tim L Whitmire, EN Capt Cary Young, EBO TSgt Will J Hillery

306 AREFS, Altus Crew R-172: P Capt A J Stewart, CP 1Lt Amy R Quiros, N 1Lt Kurt H Kramer, IBO Sgt Tony R Mendonza

509 AREFS, Pease Crew R-123: IP Capt William H Lenhardt, CP 1Lt Kathleen T Doby, IN Capt Benjamin Washburn, B A1C David K Fortier

509 AREFS, Pease Crew R-131: P Capt Steven J Sargent, CP 1Lt Susan P Easter, N 2Lt David W Cain, B A1C James R Biggs

393 BMS, Pease Crew R-31: AC Capt Thomas C Blake, RN Capt Jonathan H Levison

393 BMS, Pease Crew E-19: AC Capt Patrick J O'Connor, RN Capt Brian P Young

393 BMS, Pease Crew S-01: AC Maj Kenneth C Anderson, RN Capt Harry J Thompson

715 BMS, Pease Crew R-18: AC Maj Norris Hanes, RN Capt Robert Quick

715 BMS, Pease Crew R-34: AC Capt Ted Keesee, RN 1Lt Bill Gillette

715 BMS, Pease Crew E-30: AC Capt Ed Neves, RN Capt Gil Sherlin

325 BMS, Fairchild Crew E-22: P Capt Lawrence Haskell, CP Capt Kirk Peddicord, RN Capt John Young, N 1Lt Al Viera, EW Capt Douglas Shaw, G Amn Steven Roxbury

325 BMS, Fairchild Crew E-61: P Capt Daniel Aronson, CP 2Lt Derek Riggan, RN Capt Lynn Stone, N 1Lt Kenneth Reed, EW 1Lt Matthew Bundy, G SSgt Michael Markland

92 AREFS, Fairchild Crew S-161: AC Lt Col Jeffrey A Hewitt, CP 1Lt Richard A Quinlan, CP 1Lt Thomas C Echols, N Capt Gary L Caton, B SSgt Rodney S Erks

92 AREFS, Fairchild Crew R-185: AC Capt Frederick Klarmeyer, CP 1Lt John C Graves, N 1Lt John G Hilgenbrink, B SSgt Wade A Howard

909 AREFS, Kadena Crew R-113: P Capt Patrick C Wasko, CP 1Lt Donald L Knorr Jr, IN 1Lt Mervin H Oyafuso, B A1C Jack M Norris

909 AREFS, Kadena Crew R-132: IP Maj Bernard J McMullen, CP 2Lt Jeffrey N Stout, IN Capt Thomas C Campbell, IB Andrew J Lacasse

351 SMW, Whiteman Crew E-081: MCCC 1Lt David Resendez, DMCCC 1Lt Warren J Reddick

308 SMW, Little Rock Crew R-023: MCCC 1Lt Michael L Thomas, DMCCC 1Lt John H Farrell, MSAT SSgt Dale W Atkins, MFT Sgt Darryl G Bickford

308 SMW, Little Rock Crew E-084: MCCC Capt Joseph A Thibault, DMCC 1Lt Frank Robertson Jr, MFT SSgt Kirk W Hemphill, MSAT Sgt Kervie D Combass

308 SMW, Little Rock Crew E-080: MCCC Capt Montoria Hubbard, DMCCC 1Lt Albert J Massa, MSAT TSgt Jimmy Sharp, MFT Sgt Sean Flannery

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FLARE

CONGRATULATIONS!

Combat Crew magazine is pleased to announce that an article submitted by Captain Kevin Whitman, 97 AREFS, Blytheville AFB, has been selected as the Best Combat Crew Article of 1986. This annual award, initiated this year, allows the SAC safety staff to select the article that best presents the safety message.

Capt Whitman's article entitled "What Could Go Wrong?" was published in our February issue. It told of the lessons learned from a trans-Atlantic fighter drag fraught with unexpected difficulties.

Capt Whitman will be presented a plaque commemorating his accomplishment plus a copy of Combat Crew autographed by General Curtis E. LeMay.

Capt Kevin "Slim" Whitman is a KC-135A tanker navigator stationed at Blytheville AFB, AR. A 1980 graduate of Illinois State University's foreign language masters program, he earned his commission through OTS at Lackland AFB, TX, December 1981, then completed UNT at Mather AFB, CA, August 1982. A Distinguished Graduate from Advanced Navigation at Mather AFB, he completed CCTS at Castle AFB, CA, February 1983.